



SEMITRANS™ 3

Ultrafast IGBT Modules

SKM 800GA125D

Target Data

Features

- Homogeneous Si
- NPT-IGBT
- $V_{CE(sat)}$ with positive temperature coefficient
- High short circuit capability, self limiting to $6 \times I_C$

Typical Applications

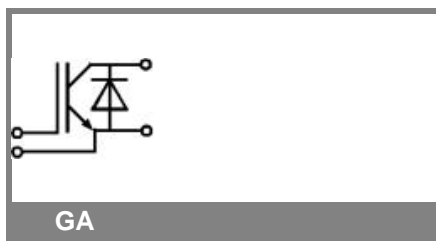
- Resonant inverters up to 100 kHz
- Inductive heating
- Electronic welders at fsw > 20 kHz

Remarks

- $I_{DC} \leq 500$ A limited by terminals
- Take care of over-voltage caused by stray inductances

Absolute Maximum Ratings		$T_{case} = 25^\circ\text{C}$, unless otherwise specified	
Symbol	Conditions	Values	Units
IGBT			
V_{CES}		1200	V
I_C	$T_c = 25$ (80) $^\circ\text{C}$	760 (530)	A
I_{CRM}	$T_c = 25$ (80) $^\circ\text{C}$, $t_p = 1$ ms	1520 (1060)	A
V_{GES}		± 20	V
T_{vj} , (T_{stg})	$T_{OPERATION} \leq T_{stg}$	- 40 ... +150 (125)	$^\circ\text{C}$
V_{isol}	AC, 1 min.	4000	V
Inverse diode			
$I_F = -I_C$	$T_c = 25$ (80) $^\circ\text{C}$	720 (500)	A
I_{FRM}	$T_c = 25$ (80) $^\circ\text{C}$, $t_p = 1$ ms	1520 (1060)	A
I_{FSM}	$t_p = 10$ ms; sin.; $T_j = 150$ $^\circ\text{C}$	5000	A

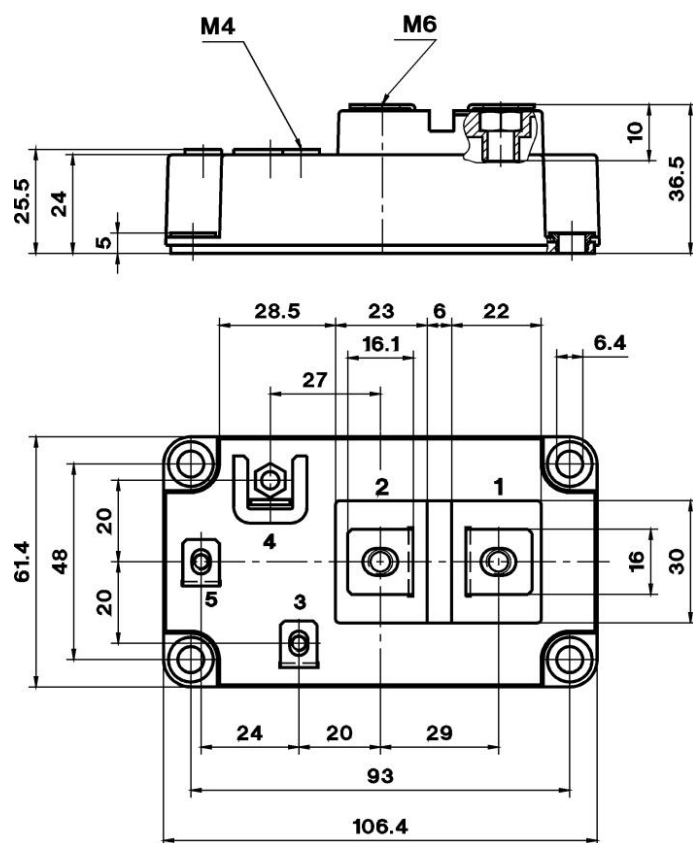
Characteristics		$T_{case} = 25^\circ\text{C}$, unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
IGBT					
$V_{GE(th)}$	$V_{GE} = V_{CE}$, $I_C = 24$ mA	4,5	5,5	6,5	V
I_{CES}	$V_{GE} = 0$, $V_{CE} = V_{CES}$, $T_j = 25$ (125) $^\circ\text{C}$		0,2	0,6	mA
$V_{CE(TO)}$	$T_j = 25$ (125) $^\circ\text{C}$		1,5 (1,7)	1,75 (1,3)	V
r_{CE}	$V_{GE} = 15$ V, $T_j = 25$ (125) $^\circ\text{C}$		2,8 (3,8)	3,3 (5,4)	m Ω
$V_{CE(sat)}$	$I_C = 600$ A, $V_{GE} = 15$ V, chip level		3,2 (4)	3,75 (4,55)	V
C_{ies}	under following conditions		37		nF
C_{oes}	$V_{GE} = 0$, $V_{CE} = 25$ V, $f = 1$ MHz		5,6		nF
C_{res}			2,8		nF
L_{CE}				20	nH
$R_{CC'+EE'}$	res., terminal-chip $T_c = 25$ (125) $^\circ\text{C}$		0,18 (0,22)		m Ω
$t_{d(on)}$	$V_{CC} = 600$ V, $I_C = 600$ A				ns
t_r	$R_{Gon} = R_{Goff} = \Omega$, $T_j = 125$ $^\circ\text{C}$				ns
$t_{d(off)}$	$V_{GE} \pm 15$ V				ns
t_f					ns
$E_{on} (E_{off})$			52 (26)		mJ
Inverse diode					
$V_F = V_{EC}$	$I_F = 600$ A; $V_{GE} = 0$ V; $T_j = 25$ (125) $^\circ\text{C}$		2,3 (2,1)	2,5 (2,3)	V
$V_{(TO)}$	$T_j = 25$ (125) $^\circ\text{C}$		1,1 (0,9)	1,3 (1,05)	V
r_T	$T_j = 25$ (125) $^\circ\text{C}$		2 (2)	2 (2,1)	m Ω
I_{RRM}	$I_F = 600$ A; $T_j = 25$ (125) $^\circ\text{C}$				A
Q_{rr}	$di/dt = A/\mu\text{s}$				μC
E_{rr}	$V_{GE} = 0$ V				mJ
Thermal characteristics					
$R_{th(j-c)}$	per IGBT			0,03	K/W
$R_{th(j-c)D}$	per Inverse Diode			0,07	K/W
$R_{th(c-s)}$	per module			0,038	K/W
Mechanical data					
M_s	to heatsink M6	3		5	Nm
M_t	to terminals (M6(M4))	2,5 (1,1)		5 (2)	Nm
w				330	g



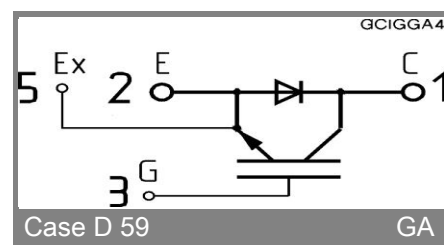
UL Recognized
File no. E 63 532

Dimensions in mm

CASED59



Case D 59



This is an electrostatic discharge sensitive device (ESDS), international standard IEC 60747-1, Chapter IX.

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